Dartford and Gravesham NHS
NHS Trust

Obstetric Sepsis Guidelines

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Sponsor Signature	
Author	Obstetric Consultant Anaesthetist, Revised by Lead Consultant for Obstetric Risk and Governance
Where available	Intranet
Target audience	Midwifery, Anaesthetic Obstetric and ITU staff

Ratification Record	**Date**

Approval Record		
Committee Name	**Chairperson**	**Date**
Labour Ward Forum	Obstetric Consultant Lead	August 2019
Pharmacy		August 2019

Consultation	**Date**
All Obstetric Consultants	August 2019
Head of Midwifery	August 2019
Professional Midwifery Advocate	August 2019
Consultant Anaesthetists	August 2019

Regulators Requirements	
MBRRACE 2017	Saving Lives, Improving Mothers' Care
UK Sepsis Trust	2017
NICE (2019)	NG121

Document Control / History	
Version No	**Reason for change**
1	New Guideline
2	Updated in line with national recommendations
3	New Trust Guidelines
4	Updated to include altered mental status
5	Updated in keeping with national recommendations
6	Incorporated changes from new NICE Guideline (definitions, sections 6.3, 7.1, 9.1, 9.2, 9.3

Contents

Document Summary

This guideline outlines the management of women presenting with Obstetric Sepsis in the antenatal, intrapartum and post-natal period. It aims to:

- Encourage all staff in the care of parturient women to be aware of the signs and symptoms of serious infection and developing critical illness.
- Facilitate early detection of Red Flag Sepsis and Immediate treatment.
- Ensure early involvement of a Consultant Obstetrician, Anaesthetist, Microbiologist, Intensive Care staff and the Infection Control Team.
- Minimise the risk of developing septic shock.

- **Antenatal community sepsis** screening and action tool can be downloaded from PAS.

- **Inpatient maternity sepsis** screening and action tool can be downloaded from PAS.

- **Postnatal** sepsis screening and action tool is on page 10 in the postnatal notes.

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Revised: Mr K Sampat, Lead Consultant for Obstetric Risk and Governance

1. Introduction

71 women died from sepsis between 2009-2012. Of these, 20 were genital tract sepsis (Group A Streptococcus being the predominant organism). 63 died from other infections classified as 'indirect' causes, including 36 women dying from influenza.

Although the incidence of maternal sepsis has reduced alongside a significant reduction in rates of influenza, it continues to be a significant cause of maternal morbidity and mortality.

Between 2013 -2015, there were 11 deaths from 'direct' causes and 12 'indirect'*. This demonstrates the ongoing importance of early recognition and prompt management of maternal sepsis in order to prevent mortality.

*Direct deaths result from obstetric complications of the pregnant state. Indirect deaths result from medical or medical health conditions that are exacerbated by pregnancy, or co-incidental deaths where the cause is unrelated to pregnancy.

2. Purpose

This guideline is intended to provide recommendations for health professionals for the investigation and treatment of suspected and proven sepsis, in line with NICE guidelines, sepsis.org.uk and the latest triennial report (MBRRACE 2017).

The early identification and immediate management of these patients is essential if outcomes are to be improved.

An update from the NICE guideline (2019): Intrapartum care for women with existing medical conditions or obstetric complications and their babies, has been integrated into this document.

3. Definitions

Sepsis: Life-threatening organ dysfunction due to a dysregulated host response to infection. This would be determined by a SOFA score of two or more, in the absence of another cause **(see Appendix 4)**

Suspected sepsis: people who might have sepsis and require face-to-face assessment and consideration of urgent intervention.

Pyrexia: a temperature of 38°C or above on a single reading, or 37.5°C or above on 2 consecutive readings (one hour apart).

Septic Shock: Subset of sepsis with circulatory and cellular metabolic dysfunction associated with higher risk of mortality. This would be determined by a mean arterial blood pressure below 65 mm Hg, or a serum lactate level greater than 2 mmol/L, despite fluid resuscitation.

The old criteria for sepsis (i.e. SIRS) are obsolete. It is now recommended that the specific criteria of **infection** and **acute, life-threatening organ dysfunction** are used by clinicians.

qSOFA score: is a bedside prompt that may identify patients with suspected infection who are at greater risk of a poor outcome. It uses three criteria including low blood pressure, high respiratory rate and altered conscious level. These variables must be assessed in keeping with the normal physiological variation in pregnancy. Modified parameters in pregnancy are SBP<90mmHg, RR >25, GCS <15. **(See appendix 5).**

AVPU: level of consciousness. A woman will either be alert, responsive to your voice, responsive to pain, or unresponsive.

GCS: Glasgow Come Scale. A more detailed assessment of the level of consciousness. A score of 15 is considered normal.

4. Duties (Roles and Responsibilities)

Obstetricians and Anaesthetists
It is the responsibility of the consultant obstetricians and consultant anaesthetists to ensure all new doctors are aware of this guideline.

Directorate Midwifery Managers
It is the responsibility of the Directorate midwifery managers to ensure that all midwives are aware of the guideline and its application in practice.

Midwives
It is the responsibility of any midwife providing care for the severely ill woman to ensure that they undertake training to maintain the skills and knowledge necessary for caring for women who require HDU level care.

5. Causes of Obstetric Sepsis

5.1 Common causes of sepsis in obstetric patients

- Chorioamnionitis
- Wound Infection
- Pneumonia
- H1N1
- Acute appendicitis / pancreatitis / cholecystitis
- Post-partum endometritis
- Pyelonephritis
- Necrotising Fasciitis

5.2 Causative organisms

These are numerous and include

- Streptococcus Group A,B, C
- Gram-negatives: Escherichia coli, Klebsiella and other coliforms
- Staphylococcal aureus
- Enterococcus faecal is, Listeria monocytogenes
- Anaerobes, Asteroids species, Peptostreptococcus, Clostridium, Fusobacterium

5.3 Mothers at increased risk of sepsis:

These include a number of patient and obstetric factors and include women who suffer with:

- Chronic disease including heart disease, liver disease, lupus, sickle cell anaemia, diabetes
- Obesity
- Aged <25 or >40
- Those undergoing invasive tests/ procedures during pregnancy / operative delivery
- Placenta praevia / abruption

6. Diagnostic Tools

The 2016 consensus definitions recommend that the SOFA criteria should replace the previously recommended SIRS criteria. On ‘quick’ initial assessment, patients with 2 or more of; **altered mental state**, **hypotension** and **tachypnoea** (qSOFA criteria) are likely to have poor outcomes.

The UK Sepsis Trust, in association with NICE, have developed a maternal sepsis tool focussing on the presence of **RED FLAG SEPSIS** that prompts time critical, immediate action to be taken. **(Appendix 1)**

Sepsis should be suspected where there is clinical evidence of infection with associated organ dysfunction. Pyrexia may be absent in some cases.

Lessons from MBRRACE:

- The obstetric patient with Sepsis must be managed by a multi-disciplinary team involving obstetricians, anaesthetists, midwives and intensivists.
- The use of imaging must still be used to aid of diagnosis even when the patient is pregnant.
- Particular caution must be taken with patients who are multiple attenders to hospital, women who work alongside children (strep A infection risk) and those who have received recent treatment with antibiotics (preceding 2 weeks).

7. Women contacting MAU

If a woman contacts the MAU, obtain a clear history. If there is a consideration that the patient has an infection, with the patient says that they are unwell; family or carer are very concerned or that patient has ongoing deterioration, they are to be invited into MAU for assessment**. Once on MAU, the inpatient maternal sepsis tool must be used.**

7.1 Inpatient Maternal Sepsis Tool (See appendix 1) This can be used on the wards as well as MAU.

This is a tool that is used in the diagnosis and simultaneous management of sepsis. It ought to be applied to all women who are pregnant or up to six weeks post- partum. It uses 'Red' and 'Amber' flag criteria, based on evidence of organ dysfunction, to prompt the immediate and subsequent management of women with suspected sepsis.

If infection is suspected the presence of a **SINGLE RED FLAG** prompts the **immediate** action of **SEPSIS 6 PATHWAY.**

7.2 The Red Flags are as follows:

- Responds only to Voice or Pain / Unresponsive
- Systolic BP $\leq$ 90 mmHg (or drop >40 from normal)
- Heart Rate >130 per minute
- Respiratory Rate $\geq$ 25 per minute
- Needs Oxygen to keep $SpO_2 \geq 92\%$
- Non-blanching rash, mottled, ashen, cyanotic
- Not passed urine in 18 hrs
- Urine output <0.5 mls/kg/hr
- Lactate $\geq$ 2 mmol/l

If **ONE** of these is present the **immediate management** includes:

- Informing the Consultant Obstetrician and Consultant Anaesthetist
- Administration of Oxygen to maintain sats >94%
- Performance of peripheral blood cultures and consider urine, sputum, vaginal swabs, breast milk, throat swabs & other potential sources of infection.
- Take specimens for microbiological culture, including blood cultures, before starting antimicrobials, if possible
- Commence CTG if 27 weeks pregnant or more

- Administration of IV antibiotics (see microbiology)
- Administration of IV Fluids
  If hypotensive or lactate > 2mmol/L, 500mls stat of crystalloid. This can be repeated up to 30mls/kg.
  If patient not hypotensive and lactate normal, discuss with doctor.
  If patient suffers with pre-eclampsia, seek medical advice.
- Check serial LACTATE. If high on venous blood gas sample, corroborate with arterial sample. Re-check after each 10 mls/kg fluid challenge. If lactate >4mmols/l, discuss with ITU.
- Monitor Urine output. Insert catheter and ensure fluid balance is monitored hourly and clearly documented.

If following these measures the patient remains hypotensive, drowsy, tachypnoeic or has a persistently elevated lactate, the critical care outreach team/ITU ought to be contacted immediately.

7.3 Amber Flag Sepsis

If infection is suspected but there is NO maternal red flag, the patient ought to be assessed for presence of AMBER FLAGS. These Include:

- Relatives Concerned about mental status
- Acute Deterioration in functional ability
- Respiratory Rate 21-24 or breathing hard
- Heart Rate 100-130 OR new arrhythmia
- Systolic BP 91-100 mmHg
- Not passed urine in 12-18 hours
- Temperature <36
- Immunosuppressed / gestational diabetes
- Has had invasive procedure in last 6 weeks
- Prolonged Rupture of membranes
- Close contact with GAS
- Bleeding / wound infection / vaginal discharge
- Non-reassuring CTG / fetal tachycardia >160

If **TWO** of these criteria are present and CONSIDER if ONE of these criteria:

- Send Bloods including LACTATE, FBC, U&Es, CRP, LFT's, Clotting, G&S
- Call ST3 doctor/shift leader for review within 1 hr
- Clinician to consider need for antibiotics within 3 hrs

If there is **AKI** present (Urine output < 0.5mls/kg/hr / elevated creatinine), commence **Immediate Sepsis Six pathway** as per RED FLAG SEPSIS.

Frequency of observations

Condition	Pulse	Blood pressure	Temperature	AVPU	Oxygen saturations	Urine output
Fever	Hourly	Four hourly, and hourly in the second stage	Hourly	Hourly	Four hourly	Record output
Unconfirmed sepsis – not on antibiotics	Hourly	Four hourly, and hourly in the second stage	Hourly	Hourly	Four hourly	Record output

Unconfirmed sepsis or sepsis – on antibiotics	Continuous, or at least every 30 mins	Continuous, or at least every 30 mins	Hourly	Every 30 mins	Continuous, or at least every 30 mins	Record output hourly via an indwelling catheter

8. Investigations:

If a patient is suspected to be suffering with sepsis, the following investigations ought to be performed as soon as practicable.

- Completion of EWS chart **(if triggered follow inpatient maternal sepsis tool)**
- Peripheral Blood Cultures
- Urine, sputum, vaginal swabs, breast milk culture, throat swab and other sources of sepsis
- Take specimens for microbiological culture, including blood cultures, before starting antimicrobials, if possible
- Bloods including FBC, U&E, CRP, LFT's, clotting, Group and Save
- Venous Blood Gas including LACTATE. If elevated consider corroboration with Arterial blood gas.
- Repeat Lactate (if elevated) every 10mls/kg crystalloid administered.
- Blood Glucose
- Radiology. Consider further imaging including X-ray, ultrasound, CT as appropriate.

8.1 Microbiology

If there is suspected infection send peripheral blood cultures, urine and vaginal swabs. Consider breast milk culture, throat swabs and other potential sources as indicated. Ideally collect prior to administration of antibiotics. Antibiotics should be administered **within one hour** of diagnosis of sepsis. Do not wait for pending results.

Initial antibiotic treatment as outlined below. **Check allergies and doses may need amending in the presence of renal impairment.** Discuss with pharmacy if clarification required.

Please check with the Microguide on Adagio

INFECTION	1ST LINE	2ND LINE/PENICILLIN ALLERGY	DURATION	COMMENTS
PREGNANT Suspected Chorioamnionitis /PROM with pyrexia • (>37.5°c on **2** occasions or >38°c on **1** occasion. • **AIM TO DELIVER without undue delay.**	Amoxycillin IV 1g 8 hrly **+** Gentamicin 1mg/kg TDS **+** Metronidazole IV 7 days 500 mg 8 hrly	Clindamycin IV 900 mgs 8 hrly **+** Gentamicin 1mg TDS	7 days Gentamicin Maximum 4 days	For women already on Benzyl penicillin IV, stop this and commence on these antibiotics. IV to oral switch Once apyrexial for 24-48 hrs Oral Amoxycillin 500 mgs 8 hrly **+** Metronidazole 400 mgs 8 hrly **Or** Clindamycin 450 mg 6 hrly
Postpartum septic shock or nor improving (Liaise with consultant microbiologist)	Piperacillin/Tazobactam (Tazocin) IV 4.5 g 8 hrly + Gentamicin IV 7mg/kg OD*	Clindamycin IV 900 mgs 8 hrly **+** Gentamicin IV 7mg/kg OD* +Metronidazole IV 500 mg 8 hrly	7 days Gentamicin Maximum 4 days 7 days	Consult Microbiologist to discuss IV to oral conversion

* Or lower depending on renal function. Use ideal body weight. Check microguide.

If PET and renal failure present then discuss with microbiologist.

Discuss cases with the consultant microbiologist if the patient does not improve following antibiotic administration. Follow advice from consultant microbiologist upon culture results.

Any patient with altered level of consciousness should receive Ceftriaxone

9. Ongoing Management

Senior Clinicians should be involved at an early stage – Consultant obstetrician, Anaesthetist, Microbiologist and Intensivist as appropriate.

- Antibiotic therapy must be reviewed in consultation with microbiologist depending on the patient's clinical need/ culture results.
- Supportive treatment with IV crystalloids as appropriate (see inpatient maternal sepsis tool for initial resuscitation guideline)
- Thromboprophylaxis – anti-embolic stockings
- Fragmin if no coagulopathy
- Monitor BM and maintain normoglycaemia

- Decision to deliver has to be consultant led with good communication between anaesthetist and obstetrician.

Patients with Septic shock should be admitted to ITU. Prompt treatment in the appropriate environment by the appropriate personnel (Intensivists/Anaesthetists) delivers a better outcome.

Also involve ITU in the care of women with any of the following:

- altered consciousness
- persistently reduced urine output (less than 0.5 ml/kg per hour), especially if obstructed labour has been excluded, for women in labour
- need for 40% oxygen to maintain oxygen saturation above 92%
- tympanic temperature of less than 36°C

Note maternal sepsis six pathway should take these into account)

10. Timing and mode of birth in women with sepsis or suspected sepsis

If the source of sepsis is thought to be the genital tract, expedite the birth.

Take into account the woman's preferences, concerns and expectations, and the whole clinical picture, including:

- the source and severity of sepsis, if known
- weeks of pregnancy
- fetal wellbeing
- stage and progress of labour
- parity
- response to treatment
- Advise: continuous cardiotocography during labour for:
    - women with suspected sepsis
    - women with confirmed sepsis
    - Fetal blood sample: do not perform this on women with pyrexia, suspected sepsis or sepsis.

10.1 Anaesthesia for women in labour with sepsis and signs of organ dysfunction

For women in labour with sepsis and any signs of organ dysfunction, regional anaesthesia should only be used with caution and advice from a consultant obstetric anaesthetist, and with a senior anaesthetist present.

10.2 Analgesia for women in labour with sepsis or suspected sepsis

For women in labour with sepsis and any signs of organ dysfunction, regional analgesia should only be used with caution and advice from a consultant obstetric anaesthetist.

For women in labour with suspected sepsis where concern is insufficient for antibiotic treatment, consider the birthing pool as a form of analgesia only after discussion with a senior midwife and a senior obstetrician.

For women in labour who need antibiotics for suspected sepsis, start the antibiotics before inserting the needle for regional analgesia.

If there are concerns about providing a woman's choice of regional analgesia, this should be discussed with the consultant obstetric anaesthetist

11. Community visits by Midwives and MSW's

Antenatally: If sepsis is suspected use the Antenatal Community Midwifery Sepsis Screening and Action Tool **(appendix 2)** to make the assessment.

Postnatally: If sepsis is suspected use the Postnatal Community Midwifery Sepsis

screening and action tool is on **page 10 of the postnatal notes (appendix 3)**.

Once the assessment has been carried out:

- Red Flag sepsis indicated: Immediate transfer into hospital, alerting maternity triage of transfer.
- Amber sepsis indicated: Please send to MAU. Transport either by car or ambulance with view to arrive within 2 hours.

The baby is especially at risk of streptococcal and staphylococcal infection during birth and during breastfeeding. The umbilical area should be examined and a paediatrician consulted in the event of sepsis in the puerperium. If either the mother or the baby is infected with invasive GAS in the postpartum period, both should be treated with antibiotics.

12. Critical Incidents

Any woman who experiences a delay in admission to ITU or HDU, or sub-standard treatment ought to have a DATIX form completed.

13. Training and Dissemination

Regular HDU courses for midwife and obstetricians will include detection, treatment and monitoring for sepsis.

A copy of this guideline will be posted on the hospital intranet, Adagio. It is the responsibility of all staff working within the maternity and neonatal units to be aware of and familiar with the guideline.

14. Monitoring Compliance with this guideline, review of results and subsequent monitoring of action plans.

The Anaesthetic lead for obstetrics will monitor compliance with this guideline. More detailed monitoring is described in the following table.

Objective to be monitored	Measure/Tool	Frequency	Lead	Reporting arrangements	Actions arising including identifying leads to take actions forward in agreed timescales	Changes to practice and lessons learned.
Relevant staff groups are carrying out responsibilities	1% of case review of notes of women admitted to HDU/ITU	Annually	Lead obstetric consultant for labour ward and lead anaesthetist consultant	Obstetric and Gynaecology clinical governance and risk meetings	identified including: Communication Delay in transfer etc to be feedback to team	Required changes to practice will be identified and actioned within a 6 month time frame. The Labour Ward Lead consultant will take each change forward where appropriate and lessons will be shared with all the relevant stakeholders.
Use and accuracy of EWS chart	Retrospective random chart audit of 1% of hand held notes where EWS chart has been used	Annually	Practice development midwife (PDM)	Joint anaesthetic/obstetric meeting	Any deficiencies identified including • Feedback to relevant practitioner regarding use of chart. • Training needs identified	

15. Associated Documents / Further Reading

This Policy should be read in accordance with the following Trust policies, procedures and guidance:

- WAC 044 Fetal Monitoring and Fetal Blood Sampling Guideline (Antenatal, Intermittent, Continuous Electronic Fetal Monitoring).
- WAC 072 Severely Ill Pregnant Women and High Dependency Care

- Antibiotics of Choice Guidelines (Adagio Microguide)
- Sepsis Initial Management Guidelines (Adagio)

16. References

MBRRACE (2016). Surveillance of maternal deaths in the UK 2012–14 and lessons learned to inform maternity care from the UK and Ireland. Confidential Enquiries into Maternal Deaths and Morbidity 2009–14
https://www.npeu.ox.ac.uk/downloads/files/mbrrace-uk/reports/MBRRACE-UK%20Maternal%20Report%202016%20-%20website.pdf

1. MBRRACE (2014) Saving Lives, Improving Mothers' Care. 2009-2012
https://www.npeu.ox.ac.uk/mbrrace-uk/reports

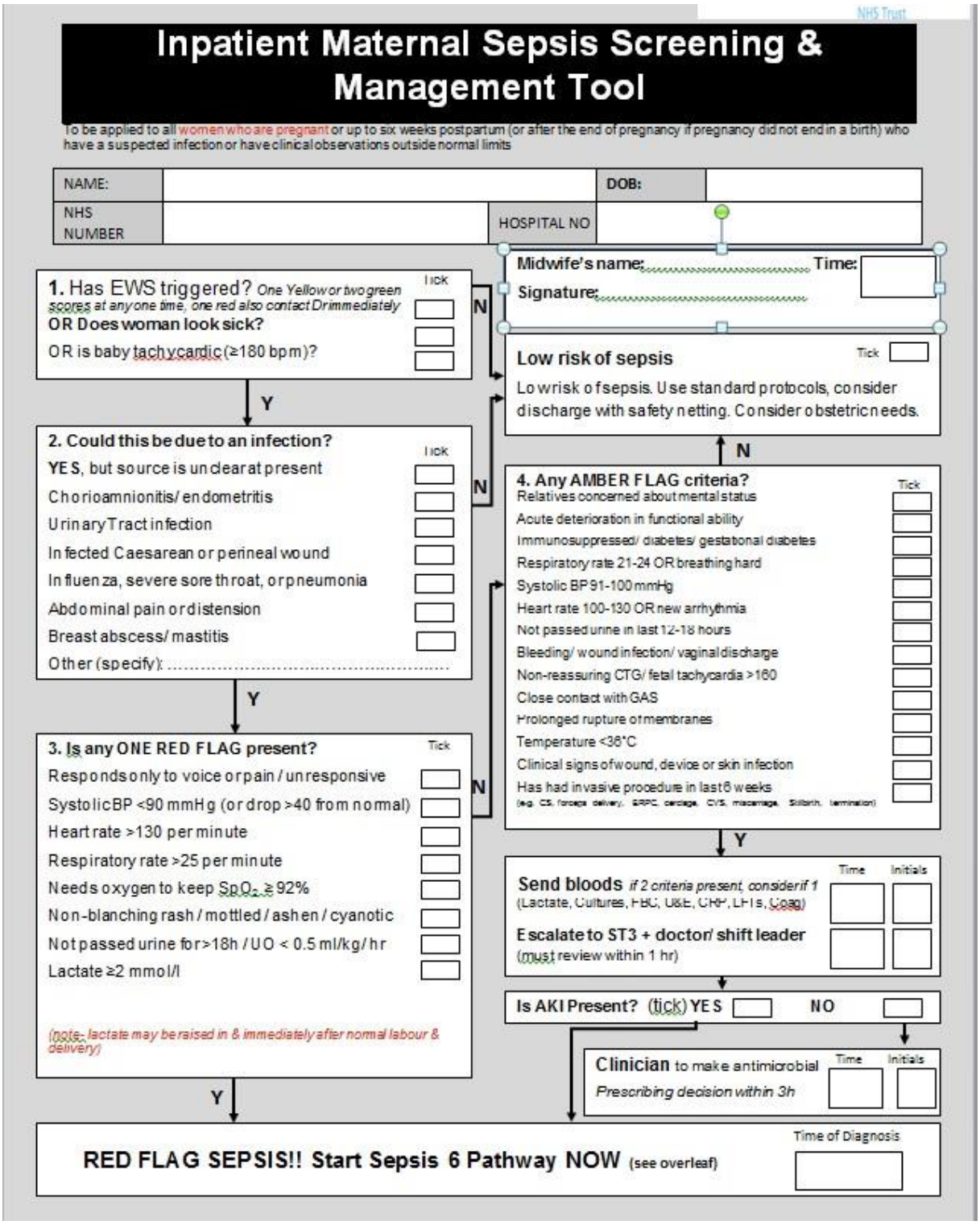
2. Singer M, et al. (2016) . The Third International Consensus Definitions for Sepsis and Septic Shock (Sepsis-3). *JAMA.* 2016;315(8):801-810. doi:10.1001/jama.2016.0287

3. NICE (2016) Sepsis: recognition, diagnosis and early management NICE guideline [NG51] Published date: July 2016 Last updated: July 2016.
https://www.nice.org.uk/guidance/ng51

4. https://sepsistrust.org

5. NICE (2019) NG121: Intrapartum care for women with existing medical conditions or obstetric complications and their babies.

Appendix 1 (THIS FORM IS NOT TO BE PRINTED OFF. PLEASE USE FORM ON PAS) Page 1



Inpatient Maternal Sepsis Screening & Management Tool

To be applied to all women who are pregnant or up to six weeks postpartum (or after the end of pregnancy if pregnancy did not end in a birth) who have a suspected infection or have clinical observations outside normal limits

NAME:		DOB:	
NHS NUMBER		HOSPITAL NO	

1. Has EWS triggered? *One Yellow or two green scores at any one time, one red also contact Drimmediately*
OR Does woman look sick?
OR is baby tachycardic (≥180 bpm)?
Tick

N

Midwife's name:..... Time:
Signature:.....

Low risk of sepsis Tick
Low risk of sepsis. Use standard protocols, consider discharge with safety netting. Consider obstetric needs.

Y

2. Could this be due to an infection? Tick
- YES, but source is unclear at present
- Chorioamnionitis/ endometritis
- Urinary Tract infection
- Infected Caesarean or perineal wound
- Influenza, severe sore throat, or pneumonia
- Abdominal pain or distension
- Breast abscess/ mastitis
- Other (specify): .....

N

4. Any AMBER FLAG criteria? Tick
- Relatives concerned about mental status
- Acute deterioration in functional ability
- Immunosuppressed/ diabetes/ gestational diabetes
- Respiratory rate 21-24 OR breathing hard
- Systolic BP 91-100 mmHg
- Heart rate 100-130 OR new arrhythmia
- Not passed urine in last 12-18 hours
- Bleeding/ wound infection/ vaginal discharge
- Non-reassuring CTG/ fetal tachycardia >160
- Close contact with GAS
- Prolonged rupture of membranes
- Temperature <36°C
- Clinical signs of wound, device or skin infection
- Has had invasive procedure in last 6 weeks (eg. CS, forceps delivery, ERPC, cerclage, CVS, miscarriage, Stillbirth, termination)

Y

3. Is any ONE RED FLAG present? Tick
- Responds only to voice or pain / unresponsive
- Systolic BP <90 mmHg (or drop >40 from normal)
- Heart rate >130 per minute
- Respiratory rate >25 per minute
- Needs oxygen to keep SpO_2 ≥ 92%
- Non-blanching rash / mottled / ashen / cyanotic
- Not passed urine for >18h / UO < 0.5 ml/kg/ hr
- Lactate ≥2 mmol/l

(note: lactate may be raised in & immediately after normal labour & delivery)

N

Y

Send bloods *if 2 criteria present, consider if 1* (Lactate, Cultures, FBC, U&E, CRP, LFTs, Coag) — Time / Initials

Escalate to ST3 + doctor/ shift leader (must review within 1 hr) — Time / Initials

Is AKI Present? (tick) YES ☐ NO ☐

Clinician to make antimicrobial *Prescribing decision within 3h* — Time / Initials

Y

RED FLAG SEPSIS!! Start Sepsis 6 Pathway NOW (see overleaf) — Time of Diagnosis

Page 2

Dartford and Gravesham NHS Trust

Maternal Sepsis 6 Pathway

Inform Shift leader/ registrar on call
State patient has RED FLAG Sepsis and requires immediate review

Time of RED FLAG Sepsis Diagnosis	Consultant informed (tick)	Initials

Within 1 Hour

ACTIONS MUST ALL BE COMPLETED WITHIN 1 HOUR

	Time Complete	Initials	Reason not done / Variance
1. Give high flow oxygen To maintain SaO2 >94%			
2. Take blood cultures At least a peripheral set. Consider e.g. urine, sputum, vaginal swabs, breast milk culture, throat swabs Think source control & timing of delivery of baby- start CTG!			
3. Give IV antibiotics According to trust guidelines on ADAGIO Treat according to probable site of infection Consider allergies prior to administration			
4. IV fluid resuscitation If hypotensive/lactate >2mmol/l, 500ml stat (can repeat up to 30ml/kg) if hypotensive or lactate abnormal. Ask Anaesthetist regarding fluids if patient has pre-eclampsia			
5. Check serial lactates Corroborate high VBG lactate with arterial sample If lactate >4mmol/l, call Critical Care and recheck after each 10ml/kg challenge			
6. Measure urine output			

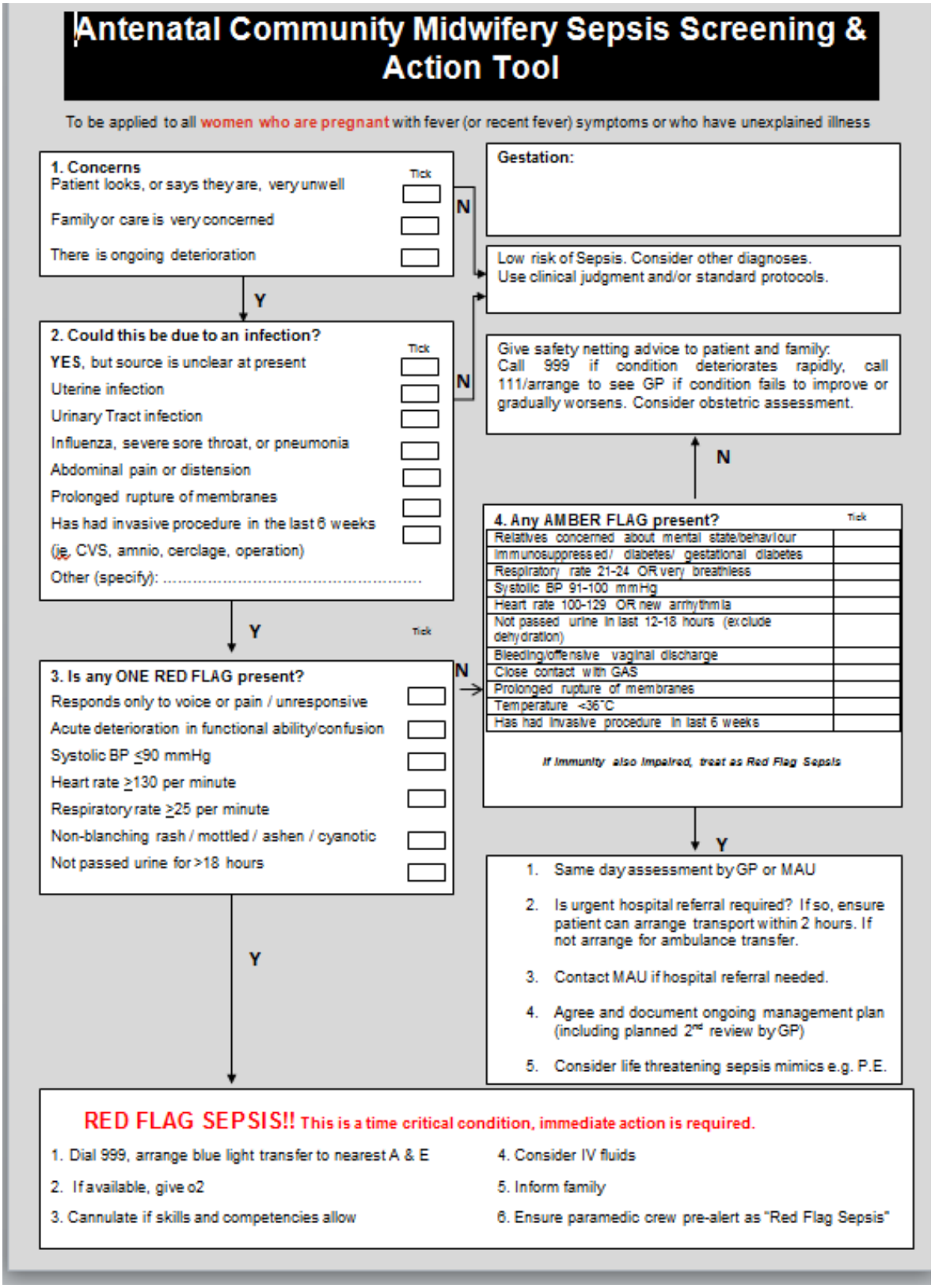
Refer to ICU / Critical Care Outreach Team if any of the following:

- Lactate not reducing
- Patient looks critically ill at any time
- Systolic BP < 90 mmHg
- Respiratory rate > 25 breaths per minute
- Altered conscious level despite resuscitation

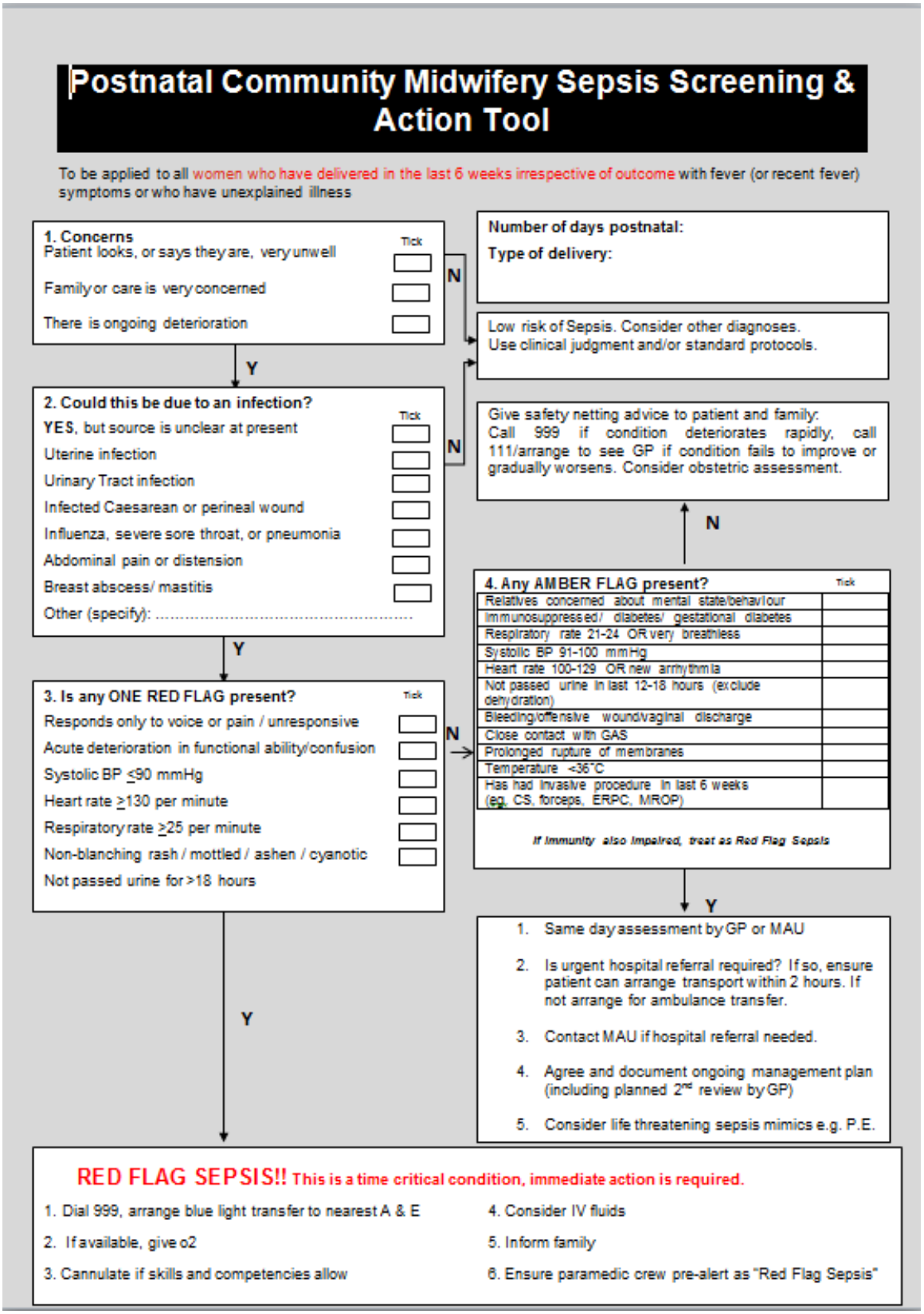
In Addition to Sepsis Six...

☐ **Escalate** to appropriate senior clinician (Reg or above)

Appendix 2 Antenatal Screening tool for community midwives. (THIS FORM IS NOT TO BE PRINTED OFF. PLEASE USE FORM ON PAS)



Appendix 3 Antenatal Screening tool for community midwives. (THIS FORM IS NOT TO BE PRINTED OFF. PLEASE USE FORM ON PAGE 10 OF THE POSTNATAL NOTES OR FROM PAS)



Appendix 4. Sequential [Sepsis-related] Organ Failure Assessment (SOFA) score adapted for use in maternity. A score of two or more, without another cause, would be consistent with the diagnosis of sepsis.

Score	0	1	2	3	4
O2 sats	Above 95% on air	Less than 95% on air			
Platelets	<150	100-150	50-100	20-50	<20
Bilirubin	<20	20-32	33-101	102-204	>204
Mean arterial blood pressure / need for inotropes	>70	<70	Need for inotropes	Need for inotropes	Need for inotropes
GCS	15	13-14	10-12	6-9	<6
Creatinine	<110	110-170	171-299	300-440	>440

Table 1. Sequential [Sepsis-Related] Organ Failure Assessment Score[a]

	Score				
System	0	1	2	3	4
Respiration					
Pao_2/Fio_2, mm Hg (kPa)	≥400 (53.3)	<400 (53.3)	<300 (40)	<200 (26.7) with respiratory support	<100 (13.3) with respiratory support
Coagulation					
Platelets, $\times 10^3/\mu L$	≥150	<150	<100	<50	<20
Liver					
Bilirubin, mg/dL (μmol/L)	<1.2 (20)	1.2-1.9 (20-32)	2.0-5.9 (33-101)	6.0-11.9 (102-204)	>12.0 (204)
Cardiovascular	MAP ≥70 mm Hg	MAP <70 mm Hg	Dopamine <5 or dobutamine (any dose)[b]	Dopamine 5.1-15 or epinephrine ≤0.1 or norepinephrine ≤0.1[b]	Dopamine >15 or epinephrine >0.1 or norepinephrine >0.1[b]
Central nervous system					
Glasgow Coma Scale score[c]	15	13-14	10-12	6-9	<6
Renal					
Creatinine, mg/dL (μmol/L)	<1.2 (110)	1.2-1.9 (110-170)	2.0-3.4 (171-299)	3.5-4.9 (300-440)	>5.0 (440)
Urine output, mL/d				<500	<200

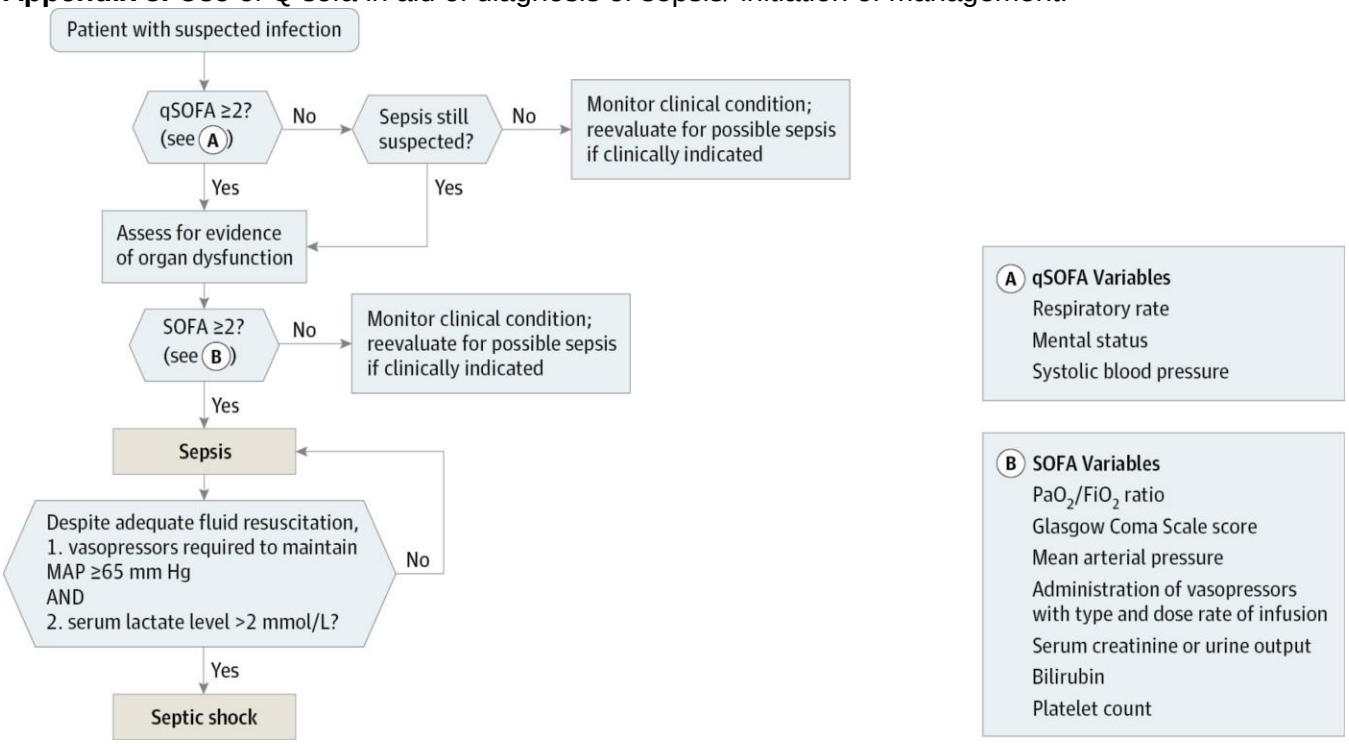
Abbreviations: Fio_2, fraction of inspired oxygen; MAP, mean arterial pressure; Pao_2, partial pressure of oxygen.

[a] Adapted from Vincent et al.[27]

[b] Catecholamine doses are given as μg/kg/min for at least 1 hour.

[c] Glasgow Coma Scale scores range from 3-15; higher score indicates better neurological function.

Appendix 5. Use of Q sofa in aid of diagnosis of sepsis/ initiation of management.



JAMA. 2016;315(8):801-810. doi:10.1001/jama.2016.0287